

~~SECRET~~

JKK  
GCM  
File

27 November 1970

MEMORANDUM FOR: DDI Member, Research and Development Board

SUBJECT : Requirements for Research and Development

REFERENCE : Your Memo to D/BGI Dated 13 November 1970,  
Same Subject

Following are R&D requirements of the Office of Basic and  
Geographic Intelligence considered to be valid over the next five years:

GEOGRAPHIC

SUBSTANTIVE INFORMATION

1. Population Characteristics (Priority 1)

This information should be detailed enough to permit a more valid description of the distribution and density of population in any given area. Information is needed on ethnic differentiations, such as physical characteristics, language, dress, housing; and even more elusive data treating religious affiliation, tribal affiliation, minority groups, attitudes, objectives, mores, and technical

25X1C

2. Food Supply (Priority 2)

Detailed information is needed on the distribution of different kinds of crops, their normal yield in an optimum growing period, the effect of weather and disasters on their yield, innovation programs (Green Revolution). Growth areas, yield, and acreage of other significant crops with intelligence significance -- such as those used in producing for narcotics -- are also needed. Maritime fisheries, pond culture of fish, and developments in synthetic protein will continue to be important.

~~SECRET~~



**SECRET**

3. Oceanography (Priority 1)

As underwater capabilities of the technically developed nations increase, so will the need for accurate intelligence on the national security implications of these capabilities. The Intelligence Community's capability to gather information on

25X1X2

4. Environmental Pollution (Priority 3)

Issues involving pollution in the environment are increasingly likely to become sources of contention among nations. As they do, the lack of basic data, or the withholding of it, may

25X1X1

INFORMATION PROCESSING

5. Photography (Priority 1)

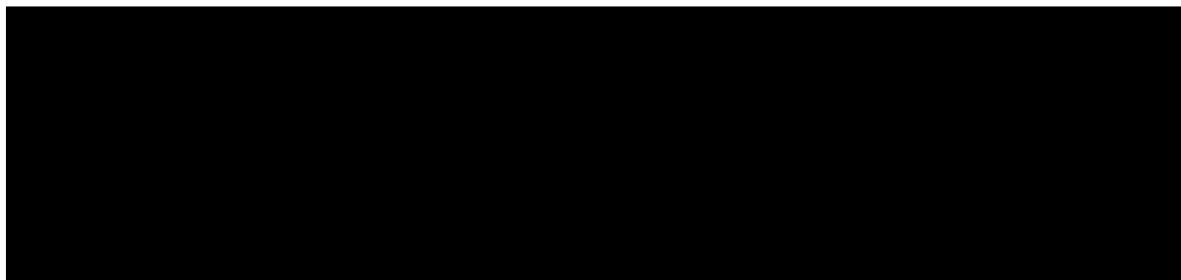
a. If increasing tensions or an upsurge in nationalism enlarge the areas denied to our usual methods of information procurement, we will be forced to rely increasingly on aerial photography. In addition, photography may be the sole source of certain types of data, especially for underdeveloped areas. Methods should be developed for identifying from photography the tangible population characteristics enumerated above (number, distribution, housing) as well as correlations that will aid in determining less tangible characteristics such as loyalties and mores. All retrieval methods will need to be designed so that they will permit quick and accurate determination of the coverage needed, and provide copies immediately.

25X1B

25X1B

**SECRET**

**SECRET**



c. Rapid reconnaissance mapping photography for areas now available but likely to be denied is urgently needed. Good quality large-scale topographic maps are not available for much of the underdeveloped world. Aerial photography holds the key to correcting this deficiency.

d. A device such as [REDACTED] for use with aerial photography would facilitate identification of significant changes shown on the newer photography.

6. Computerized Data Base (Priority 2)

Development of a computerized geographic intelligence data base and a retrieval system with all area information coded by geographic coordinates or grid cells is needed. The development of a better optical character reader (OCR) for inputting the data is a critical bottleneck. There is a need for an OCR capable of handling all types of fonts, which will obviate the need to retype the data before inputting the file. The system should have the capability for storing and retrieving both quantitative and qualitative information by areas, [REDACTED] and should incorporate the map-making capabilities of existing systems such as [REDACTED]. An analyst in the Magazine Building should be able to remotely view the CIA Library's and Map Library's title-holdings on a topic of interest and, by pressing a button on the console automatically place an order for a book or map, charge it to the particular analyst, and make possible the rapid delivery of the book to the analyst.

**SECRET**

SECRET

## CARTOGRAPHIC

### INFORMATION PROCESSING

#### 7. Digitizer (Priority 1)

a. A need exists for automating the digitizing process. There is evidence that the Cartography Division will be asked to digitize huge quantities of contour lines in a short time span. Although line scanners are available on the market and will provide the X and Y value, there is no automated system yet developed which will produce the Z value. It is anticipated that considerable funding will be required to develop the essential hardware.

b. The DDS digital plotter is currently being driven by a PDP-8 which has additional computer capabilities. There is a need for an interactive system with a digitizer whereby the operator is assured that his work is in fact being recorded, and a method developed where the operator can, at any time, check what has been digitized. If errors are detected, corrections can be made immediately -- thereby saving considerable time over the present system of completing a digitizing project, producing a plot tape, and then plotting the entire job before editing can take place. Consultations with ORD indicate that the PDP-8 can be utilized to accomplish this task. Funding, if any, would be minimal.

#### 8. Color Xerography (Priority 3)

The demand for visual aids for briefing purposes has risen sharply over the past few years and frequently involves converting existing hard-copy graphics into vugraphs. If separation plates of the required graphic are available, the problem is relatively simple. But if the separation plates are not available in the file, a full-fledged color separating operation must ensue. The Minnesota Mining Corporation has under development a piece of hardware which will produce "instant vugraphs", but the resolution of the color transparency has been judged to be substandard. It would be advisable to investigate this 3-M process and perhaps others in order to develop an acceptable system. Funding requirements are unknown and would depend on the initial findings of any investigation.

SECRET

SECRET

25X1A5A1

10. Laser-plotter (Priority 3)

25X1X1

25X1X1  
25X1X1

It is anticipated that, within the next five years, Cartography Division will have implemented the full potential of the [REDACTED] which is due for delivery in December 1970, and the [REDACTED] which is receiving acceptance tests. At that time, we should take a hard look at the developments taking place in producing a laser-plotter. Predictions in trade journals indicate that such an instrument will generate type, draft area tones, produce hill shading, prepare color copy via its three frequency output, and will greatly assist in handling problems in computer memory. Informal discussions have taken place with ORD on the developments of this piece of equipment -- particularly the research

25X1A5A1

11. Holography (Priority 3)

The Japanese Telephone Company is advertising a system whereby the entire telephone directory for Tokyo can be stored on four pages. It seems advisable to investigate the potential of this little-known system in view of the fact that the Cartography Division is in the early stages of developing a multi-million point data bank where present storage techniques are cumbersome and possibly inadequate.

Distribution:

O&I - Addressee

1 - Ch/GD

1 - CAPP

2 - D/BGI

DD/BGI:RTA:jmc [REDACTED] Nov 70)

25X1A9A

Deputy Director

Basic and Geographic Intelligence

SECRET